# PATENT ABSTRACTS OF JAPAN

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## (54) CHEESE AND CHEESE FLAVOR

(57)Abstract:
PROBLEM TO BE SOLVED: To obtain mold cheese having an excellent flavor and a cheese flavor prepared from the mold cheese.
SOLUTION: A milk raw material prepared to have ≤15 wt.% milk solids- not-fat and ≥65 wt.% fat content is inoculated with a mold and fermented to give the mold cheese having an excellent flavor without carrying out complicated operations such as a complex culture control, a reaction control of added enzyme, purification of the enzyme from the mold, etc. This cheese flavor having an excellent taste is obtained by collecting the oil phase of the cheese.

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## CLAIMS

[Claim(s)]
[Claim 1]A mold system cheese head having the presentation of 15 or less % of the weight of solid-not-fat, and 65 % of the weight or more of fat.
[Claim 2]A manufacturing method of the cheese head according to claim 1 inoculating and fermenting mold in a milk raw material which are 15 or less % of the weight of solid-not-fat, and 65 % of the weight or more of fat.
[Claim 3]Foodstuffs which blended the cheese head according to claim 1.
[Claim 4]A cheese-head flavor which consists of an oil phase of the cheese head according to claim 1.
[Claim 5]Foodstuffs which blended the cheese-head flavor according to claim 4.

[Translation done.]

## DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Field of the Invention]This invention relates to the cheese-head flavor further prepared from this mold system cheese head about a mold system cheese head which has peculiar and good flavor, and a manufacturing method for the same.
[0002]
[Description of the Prior Art]The flavor of a cheese head is generated when protein and the fat which are contained in a raw material are disassembled by operation of the microorganism used as starters, such as added rennet, lactic acid bacteria, and mold, the microorganism of milk raw material origin, an enzyme, etc. during aging. Not all are clearly made whether for this flavor generation process to be very complicated, and to have happened by what kind of reaction.
[0003]Generally, although aging for obtaining good flavor takes time to a cheese head, the trial which promotes aging by various methods is made. For example, it is proposed in the method of raising maturing temperature, raising the moisture content of a cheese-head slurry, or adding the biomass which carried out an enzyme and special processing to the cheese-head slurry. (A FEMS microbiology review, 12,239-252 (1993))
[0004]By operation of mold, aging advances comparatively for a short time, and Camembert cheese, Brie cheese, blue cheese, etc. which are cheese heads which made the surface and the inside of a cheese head grow mold have good flavor peculiar to a mold system cheese head. Although this flavor is generated by disassembling protein and a fat with the enzyme which mold produces, the trial which generates the flavor of a mold system cheese head for a short time using the character of this mold is made.
[0005]For example, a method of cultivating mold by a cheese-head slurry (the patent No. 2622864 gazette), Although the method (the patent No. 2959892 gazette) of adding protease

and stearolytic enzyme on a cheese-head slurry or a card and the method (JP,4-84855,A) of being what condensed whole milk by ultrafiltration membrane, and cultivating mold have been performed, Disassembly of protein or a fat does not progress, but there is a problem of good flavor not generating or generating the flavor which is not preferred and bitter taste which disassembly of protein or a fat progresses too much conversely, and are called a "mold odor", and the immense labor needed to be directed towards culture control of mold, or reaction control of an enzyme.

[0006]

[Problem(s) to be Solved by the Invention]this invention makes it SUBJECT to provide the cheese-head flavor prepared from the mold system cheese head which has good flavor, and this mold system cheese head, without doing the complicated work of complicated culture control, reaction control of an additive enzyme, enzyme refining from mold, etc. in view of this art.

[0007]

[Means for Solving the Problem]When this invention persons inoculate and ferment mold in a milk raw material prepared a place which has inquired wholeheartedly in order to solve an aforementioned problem so that it might become 15 or less % of the weight of solid-not-fat, and 65 % of the weight or more of fat, It found out that a mold system cheese head which has good flavor was obtained, without doing complicated work of complicated culture control, reaction control of an additive enzyme, enzyme refining from mold, etc. By extracting an oil phase from the above-mentioned mold system cheese head, it found out that a cheese-head flavor which has the good flavor of a mold system cheese head was obtained, and this invention was completed. A cheese head of this invention is a mold system cheese head having the presentation of 15 or less % of the weight of solid-not-fat, and 65 % of the weight or more of fat, even if it does not perform complicated culture control, fermentation progresses moderately, and it is characterized by good flavor being maintainable for a long time. This invention is explained in detail below.

[0008]

[Embodiment of the Invention]A fat and solid-not-fat are mixed and the milk raw material used for this invention should just prepare solid-not-fat so that it may become 65 % of the weight or more about 15 or less % of the weight and fat. As a fat, separation cream, butter, high fat cream cheese, cream cheese, etc. can be mentioned. As solid-not-fat, what carried out disintegration of butter milk, whey, skim milk, or these can be mentioned.

[0009]As mold used for this invention, a penicillium KAMAN bell tee (Penicilliumcamembertii), The penicillium KAZEI column (Penicilliumcaseicolum), The mold currently used for manufacture of mold system cheese heads, such as penicillium lock forte (Penicilliumroquefortii) and the Geotrichum candy dam (Geotrichumcandidum), can be

mentioned.

[0010]If it is the temperature zone which fitted growth of the mold of its that about fermentation temperature, there will be no restriction in particular, but it is desirable that it is for 10-30 ** which is the culture temperature of common mold. What is necessary is for there to be no restriction in particular, since it changes with strains of culture temperature and mold about a fermentation period, but just to set up suitably so that the good flavor of a mold system cheese head may generate and a mold odor may not occur. Thus, the mold system cheese head of obtained this invention can also be used as a raw material of cheese-head flavor foodstuffs, although it has good flavor and can also eat as it is.

[0011]The cheese-head flavor of this invention can be obtained by extracting an oil phase from the above-mentioned milk raw material and the mold system cheese head of this invention manufactured using mold. For example, after heating the cheese head of this invention and making protein condense, it can obtain by removing this and collecting oil phases. Thus, the cheese-head flavor of obtained this invention has the good flavor which a mold system cheese head has, and can add and use it for foodstuffs. An example is shown below and this invention is explained more to details.

[0012]

[Work example 1]By repeating separation of cream with a cream separator, the high fat cream cheese of 2 % of the weight of solid-not-fat and 75 % of the weight of fat was prepared from fresh milk. Casein was added to this high fat cream cheese, and the milk raw materials 1-7 were prepared so that it might become solid-not-fat and fat which are shown in Table 1.

[0013]

[Table 1]

(単位 重量%)

| | 高脂肪クリームチーズ | カゼイン | 無脂乳固形分 | 脂肪分 |
|---|---|---|---|---|
| 乳原料1 | 100 | 0 | 2 | 75 |
| 乳原料2 | 98 | 2 | 4 | 73 |
| 乳原料3 | 95 | 5 | 7 | 71 |
| 乳原料4 | 90 | 10 | 12 | 67 |
| 乳原料5 | 87 | 13 | 15 | 65 |
| 乳原料6 | 82 | 18 | 20 | 61 |
| 乳原料7 | 61 | 39 | 40 | 46 |

[0014]After heat-sterilizing these milk raw materials (for 90 ** and 5 seconds), a penicillium KAZEI column (Penicilliumcaseicolum) spore is inoculated into a milk raw material so that it may be set to g in 10,000 pieces /, It was made to ferment at 25 **, fermented material was sampled temporally, and the flavor by the special panelist of trinominal was evaluated.The

result is shown in Table 2. O What all the members' trinominals made good [ flavor ], the thing to which 1 thru/or a binary name made ** those with a mold odor, and x express what all the members' trinominals made those with a mold odor.

[0015]

[Table 2]

| | 培養日数 | | | |
|---|---|---|---|---|
| | 14 日 | 28 日 | 35 日 | 42 日 |
| 乳原料 1 | ○ | ○ | ○ | ○ |
| 乳原料 2 | ○ | ○ | ○ | ○ |
| 乳原料 3 | ○ | ○ | ○ | ○ |
| 乳原料 4 | ○ | ○ | ○ | ○ |
| 乳原料 5 | ○ | ○ | ○ | ○ |
| 乳原料 6 | ○ | △ | × | × |
| 乳原料 7 | ○ | △ | × | × |

[0016]It turned out that it does not generate a mold odor even if the mold system cheese head produced by inoculating and fermenting mold in the milk raw material which according to this prepared solid-not-fat so that it might become 65 % of the weight or more about 15 or less % of the weight and fat does not carry out complicated culture management, but it has good flavor.

[0017]

[Work example 2]After heat-sterilizing the high fat cream cheese prepared in Example 1 (for 90 ** and 5 seconds), Inoculate the penicillium KAZEI column (Penicilliumcaseicolum) or a penicillium lock forte (Penicilliumroquefortii) spore into high fat cream cheese so that it may be set to g in 10,000 pieces /, and it is made to ferment at 15 **, When fermented material was sampled temporally and the flavor by a special panelist was evaluated, even if the mold system cheese head using which mold did not carry out complicated culture management, either, it did not generate a mold odor, but it had good flavor.

[0018]

[Work example 3]Material was mixed at a rate shown below, it agitated well with the homogenizer, and the milk raw materials 8-10 were prepared.

Milk raw material 8: Butter oil 65 weight section, skim milk 20 weight section, whey powder 10 weight section, butter milk 5 weight section (15 % of the weight of solid-not-fat, 65 % of the weight of fat)

Milk raw material 9: Butter 85 weight section, cream cheese 5 weight section, powdered-skim-milk 5 weight section, butter milk powder 5 weight section (14 % of the weight of solid-not-fat, 70 % of the weight of fat)

Milk raw material 10: Butter oil 50 weight section, cream 20 weight section, high fat cream cheese (what was prepared in Example 1) 20 weight section, whey powder 5 weight section, cheese whey 5 weight section (12 % of the weight of solid-not-fat, 74 % of the weight of fat)
[0019]After heat-sterilizing these milk raw materials (for 90 ** and 5 seconds), Inoculate a penicillium KAMAN bell tee (Penicilliumcamembertii) and a Geotrichum candy dam (Geotrichumcandidum) spore into a milk raw material so that it may be set to g in 10,000 pieces /, respectively, and it is made to ferment at 20 **, When fermented material was sampled temporally and the flavor by a special panelist was evaluated, even if the mold system cheese head of the gap to use the milk raw materials 8-10 for did not carry out complicated culture management, either, it did not generate a mold odor, but it had good flavor.
[0020]
[Work example 4]In accordance with the conventional method, the tarts 1-3 were manufactured by the combination which was prepared in two kinds of mold system cheese heads, the Camembert cheese flavor obtained by fermenting for 20 days on the same conditions as Example 2, and blue cheese flavor, and Example 1, and was shown in Table 3 using heat-sterilized (for 90 ** and 5 seconds) high fat cream cheese.
[0021]
[Table 3]

| | タルト1 | タルト2 | タルト3 |
|---|---|---|---|
| (ビスケット生地) | | | |
| 本発明カビ系チーズ (カマンベールチーズ風味) | 80g | — | — |
| 本発明カビ系チーズ (ブルーチーズ風味) | — | 80g | — |
| 高脂肪クリームチーズ | — | — | 80g |
| 塩 | 少々 | 少々 | 少々 |
| グラニュー糖 | 25g | 25g | 25g |
| 溶き卵 | 1/2個 | 1/2個 | 1/2個 |
| 薄力粉 | 145g | 145g | 145g |
| (チーズクリーム) | | | |
| 本発明カビ系チーズ (カマンベールチーズ風味) | 200g | — | — |
| 本発明カビ系チーズ (ブルーチーズ風味) | — | 200g | — |
| 高脂肪クリームチーズ | — | — | 200g |
| カッテージチーズ | 100g | 100g | 100g |
| ブランデー | 大さじ1 | 大さじ1 | 大さじ1 |
| 生クリーム | 90g | 90g | 90g |
| グラニュー糖 | 45g | 45g | 45g |
| 粉ゼラチン | 3g | 3g | 3g |
| 水 | 15g | 15g | 15g |

[0022]When the flavor by a special panelist is evaluated about these tarts, the tart 1 using the mold system cheese head (Camembert cheese flavor) of this invention has rich Camembert cheese flavor to the flavor of the tart 3 using high fat cream cheese having been a flat.
The tart 2 using the mold system cheese head (blue cheese flavor) of this invention had rich blue cheese flavor.

[0023]
[Work example 5]After heating two kinds of mold system cheese heads obtained by fermenting for 20 days on the same conditions as Example 2, Camembert cheese flavor and blue cheese flavor, for 5 minutes at 95 **, respectively, it was neglected, the precipitate portion was removed, oil phase portions were collected, and the cheese-head flavor of two kinds of this inventions was manufactured.
[0024]
[Work example 6]By the combination shown in Table 4, the bread 1-3 was manufactured in accordance with the conventional method.
[0025]
[Table 4]

(単位 g)

| | 食パン1 | 食パン2 | 食パン3 |
|---|---|---|---|
| 強力粉 | 250 | 250 | 250 |
| 砂糖 | 14 | 14 | 14 |
| 脱脂粉乳 | 5 | 5 | 5 |
| 食塩 | 4 | 4 | 4 |
| 本発明チーズフレーバー(カマンベールチーズ風味) | 15 | — | — |
| 本発明チーズフレーバー(ブルーチーズ風味) | — | 15 | — |
| バターオイル | — | — | 15 |
| 水 | 180 | 180 | 180 |
| ドライイースト | 3 | 3 | 3 |

[0026]When the flavor by a special panelist is evaluated about these bread, the bread 1 using the cheese-head flavor (Camembert cheese flavor) of this invention has rich Camembert cheese flavor to the flavor of the bread 3 using butter oil having been a flat.
The bread 2 using the cheese-head flavor (blue cheese flavor) of this invention had rich blue cheese flavor.

[0027]
[Effect of the Invention]Since a mold odor is not generated even if it does not carry out complicated culture management, but it has good flavor, the mold system cheese head of this invention can be easily obtained compared with the conventional mold system cheese-head flavor foodstuffs.

[Translation done.]

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## TECHNICAL FIELD

[Field of the Invention]This invention relates to the cheese-head flavor further prepared from this mold system cheese head about a mold system cheese head which has peculiar and good flavor, and a manufacturing method for the same.

[Translation done.]

## PRIOR ART

[Description of the Prior Art]The flavor of a cheese head is generated when protein and the fat which are contained in a raw material are disassembled by operation of the microorganism used as starters, such as added rennet, lactic acid bacteria, and mold, the microorganism of milk raw material origin, an enzyme, etc. during aging. Not all are clearly made whether for this flavor generation process to be very complicated, and to have happened by what kind of reaction.

[0003]Generally, although aging for obtaining good flavor takes time to a cheese head, the trial which promotes aging by various methods is made. For example, it is proposed in the method of raising maturing temperature, raising the moisture content of a cheese-head slurry, or adding the biomass which carried out an enzyme and special processing to the cheese-head slurry. (A FEMS microbiology review, 12,239-252 (1993))

[0004]By operation of mold, aging advances comparatively for a short time, and Camembert cheese, Brie cheese, blue cheese, etc. which are cheese heads which made the surface and the inside of a cheese head grow mold have good flavor peculiar to a mold system cheese head. Although this flavor is generated by disassembling protein and a fat with the enzyme which mold produces, the trial which generates the flavor of a mold system cheese head for a short time using the character of this mold is made.

[0005]For example, a method of cultivating mold by a cheese-head slurry (the patent No. 2622864 gazette), Although the method (the patent No. 2959892 gazette) of adding protease and stearolytic enzyme on a cheese-head slurry or a card and the method (JP,4-84855,A) of being what condensed whole milk by ultrafiltration membrane, and cultivating mold have been performed, Disassembly of protein or a fat does not progress, but there is a problem of good flavor not generating or generating the flavor which is not preferred and bitter taste which disassembly of protein or a fat progresses too much conversely, and are called a "mold odor", and the immense labor needed to be directed towards culture control of mold, or reaction

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## EFFECT OF THE INVENTION

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## TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention]this invention makes it SUBJECT to provide the cheese-head flavor prepared from the mold system cheese head which has good flavor, and this mold system cheese head, without doing the complicated work of complicated culture control, reaction control of an additive enzyme, enzyme refining from mold, etc. in view of this art.

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## MEANS

[Means for Solving the Problem]When this invention persons inoculate and ferment mold in a milk raw material prepared a place which has inquired wholeheartedly in order to solve an aforementioned problem so that it might become 15 or less % of the weight of solid-not-fat, and 65 % of the weight or more of fat, It found out that a mold system cheese head which has good flavor was obtained, without doing complicated work of complicated culture control, reaction control of an additive enzyme, enzyme refining from mold, etc. By extracting an oil phase from the above-mentioned mold system cheese head, it found out that a cheese-head flavor which has the good flavor of a mold system cheese head was obtained, and this invention was completed. A cheese head of this invention is a mold system cheese head having the presentation of 15 or less % of the weight of solid-not-fat, and 65 % of the weight or more of fat, even if it does not perform complicated culture control, fermentation progresses moderately, and it is characterized by good flavor being maintainable for a long time. This invention is explained in detail below.
[0008]
[Embodiment of the Invention]A fat and solid-not-fat are mixed and the milk raw material used for this invention should just prepare solid-not-fat so that it may become 65 % of the weight or more about 15 or less % of the weight and fat. As a fat, separation cream, butter, high fat cream cheese, cream cheese, etc. can be mentioned. As solid-not-fat, what carried out disintegration of butter milk, whey, skim milk, or these can be mentioned.
[0009]As mold used for this invention, a penicillium KAMAN bell tee (Penicilliumcamembertii), The penicillium KAZEI column (Penicilliumcaseicolum), The mold currently used for manufacture of mold system cheese heads, such as penicillium lock forte (Penicilliumroquefortii) and the Geotrichum candy dam (Geotrichumcandidum), can be mentioned.
[0010]If it is the temperature zone which fitted growth of the mold of its that about fermentation

temperature, there will be no restriction in particular, but it is desirable that it is for 10-30 ** which is the culture temperature of common mold. What is necessary is for there to be no restriction in particular, since it changes with strains of culture temperature and mold about a fermentation period, but just to set up suitably so that the good flavor of a mold system cheese head may generate and a mold odor may not occur. Thus, the mold system cheese head of obtained this invention can also be used as a raw material of cheese-head flavor foodstuffs, although it has good flavor and can also eat as it is.

[0011]The cheese-head flavor of this invention can be obtained by extracting an oil phase from the above-mentioned milk raw material and the mold system cheese head of this invention manufactured using mold. For example, after heating the cheese head of this invention and making protein condense, it can obtain by removing this and collecting oil phases. Thus, the cheese-head flavor of obtained this invention has the good flavor which a mold system cheese head has, and can add and use it for foodstuffs. An example is shown below and this invention is explained more to details.

[0012]

[Work example 1]By repeating separation of cream with a cream separator, the high fat cream cheese of 2 % of the weight of solid-not-fat and 75 % of the weight of fat was prepared from fresh milk. Casein was added to this high fat cream cheese, and the milk raw materials 1-7 were prepared so that it might become solid-not-fat and fat which are shown in Table 1.

[0013]

[Table 1]

(単位 重量%)

| | 高脂肪クリームチーズ | カゼイン | 無脂乳固形分 | 脂肪分 |
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| 乳原料2 | 98 | 2 | 4 | 73 |
| 乳原料3 | 95 | 5 | 7 | 71 |
| 乳原料4 | 90 | 10 | 12 | 67 |
| 乳原料5 | 87 | 13 | 15 | 65 |
| 乳原料6 | 82 | 18 | 20 | 61 |
| 乳原料7 | 61 | 39 | 40 | 46 |

[0014]After heat-sterilizing these milk raw materials (for 90 ** and 5 seconds), a penicillium KAZEI column (Penicilliumcaseicolum) spore is inoculated into a milk raw material so that it may be set to g in 10,000 pieces /, It was made to ferment at 25 **, fermented material was sampled temporally, and the flavor by the special panelist of trinominal was evaluated.The result is shown in Table 2. O What all the members' trinominals made good [ flavor ], the thing to which 1 thru/or a binary name made ** those with a mold odor, and x express what all the

members' trinominals made those with a mold odor.

[0015]

[Table 2]

| | 培養日数 | | | |
|---|---|---|---|---|
| | 14 日 | 28 日 | 35 日 | 42 日 |
| 乳原料 1 | ○ | ○ | ○ | ○ |
| 乳原料 2 | ○ | ○ | ○ | ○ |
| 乳原料 3 | ○ | ○ | ○ | ○ |
| 乳原料 4 | ○ | ○ | ○ | ○ |
| 乳原料 5 | ○ | ○ | ○ | ○ |
| 乳原料 6 | ○ | △ | × | × |
| 乳原料 7 | ○ | △ | × | × |

[0016]It turned out that it does not generate a mold odor even if the mold system cheese head produced by inoculating and fermenting mold in the milk raw material which according to this prepared solid-not-fat so that it might become 65 % of the weight or more about 15 or less % of the weight and fat does not carry out complicated culture management, but it has good flavor.

[0017]

[Work example 2]After heat-sterilizing the high fat cream cheese prepared in Example 1 (for 90 ** and 5 seconds), Inoculate the penicillium KAZEI column (Penicilliumcaseicolum) or a penicillium lock forte (Penicilliumroquefortii) spore into high fat cream cheese so that it may be set to g in 10,000 pieces /, and it is made to ferment at 15 **, When fermented material was sampled temporally and the flavor by a special panelist was evaluated, even if the mold system cheese head using which mold did not carry out complicated culture management, either, it did not generate a mold odor, but it had good flavor.

[0018]

[Work example 3]Material was mixed at a rate shown below, it agitated well with the homogenizer, and the milk raw materials 8-10 were prepared.

Milk raw material 8: Butter oil 65 weight section, skim milk 20 weight section, whey powder 10 weight section, butter milk 5 weight section (15 % of the weight of solid-not-fat, 65 % of the weight of fat)

Milk raw material 9: Butter 85 weight section, cream cheese 5 weight section, powdered-skim-milk 5 weight section, butter milk powder 5 weight section (14 % of the weight of solid-not-fat, 70 % of the weight of fat)

Milk raw material 10: Butter oil 50 weight section, cream 20 weight section, high fat cream cheese (what was prepared in Example 1) 20 weight section, whey powder 5 weight section,

cheese whey 5 weight section (12 % of the weight of solid-not-fat, 74 % of the weight of fat)
[0019]After heat-sterilizing these milk raw materials (for 90 ** and 5 seconds), Inoculate a penicillium KAMAN bell tee (Penicilliumcamembertii) and a Geotrichum candy dam (Geotrichumcandidum) spore into a milk raw material so that it may be set to g in 10,000 pieces /, respectively, and it is made to ferment at 20 **, When fermented material was sampled temporally and the flavor by a special panelist was evaluated, even if the mold system cheese head of the gap to use the milk raw materials 8-10 for did not carry out complicated culture management, either, it did not generate a mold odor, but it had good flavor.
[0020]
[Work example 4]In accordance with the conventional method, the tarts 1-3 were manufactured by the combination which was prepared in two kinds of mold system cheese heads, the Camembert cheese flavor obtained by fermenting for 20 days on the same conditions as Example 2, and blue cheese flavor, and Example 1, and was shown in Table 3 using heat-sterilized (for 90 ** and 5 seconds) high fat cream cheese.
[0021]
[Table 3]

| | タルト1 | タルト2 | タルト3 |
|---|---|---|---|
| (ビスケット生地) | | | |
| 本発明カビ系チーズ (カマンベールチーズ風味) | 80g | — | — |
| 本発明カビ系チーズ (ブルーチーズ風味) | — | 80g | — |
| 高脂肪クリームチーズ | — | — | 80g |
| 塩 | 少々 | 少々 | 少々 |
| グラニュー糖 | 25g | 25g | 25g |
| 溶き卵 | 1/2個 | 1/2個 | 1/2個 |
| 薄力粉 | 145g | 145g | 145g |
| (チーズクリーム) | | | |
| 本発明カビ系チーズ (カマンベールチーズ風味) | 200g | — | — |
| 本発明カビ系チーズ (ブルーチーズ風味) | — | 200g | — |
| 高脂肪クリームチーズ | — | — | 200g |
| カッテージチーズ | 100g | 100g | 100g |
| ブランデー | 大さじ1 | 大さじ1 | 大さじ1 |
| 生クリーム | 90g | 90g | 90g |
| グラニュー糖 | 45g | 45g | 45g |
| 粉ゼラチン | 3g | 3g | 3g |
| 水 | 15g | 15g | 15g |

[0022]When the flavor by a special panelist is evaluated about these tarts, the tart 1 using the mold system cheese head (Camembert cheese flavor) of this invention has rich Camembert cheese flavor to the flavor of the tart 3 using high fat cream cheese having been a flat.
The tart 2 using the mold system cheese head (blue cheese flavor) of this invention had rich blue cheese flavor.

[0023]
[Work example 5]After heating two kinds of mold system cheese heads obtained by fermenting for 20 days on the same conditions as Example 2, Camembert cheese flavor and blue cheese flavor, for 5 minutes at 95 **, respectively, it was neglected, the precipitate portion was removed, oil phase portions were collected, and the cheese-head flavor of two kinds of this inventions was manufactured.
[0024]
[Work example 6]By the combination shown in Table 4, the bread 1-3 was manufactured in accordance with the conventional method.
[0025]
[Table 4]

(単位 g)

| | 食パン1 | 食パン2 | 食パン3 |
|---|---|---|---|
| 強力粉 | 250 | 250 | 250 |
| 砂糖 | 14 | 14 | 14 |
| 脱脂粉乳 | 5 | 5 | 5 |
| 食塩 | 4 | 4 | 4 |
| 本発明チーズフレーバー(カマンベールチーズ風味) | 15 | — | — |
| 本発明チーズフレーバー(ブルーチーズ風味) | — | 15 | — |
| バターオイル | — | — | 15 |
| 水 | 180 | 180 | 180 |
| ドライイースト | 3 | 3 | 3 |

[0026]When the flavor by a special panelist is evaluated about these bread, the bread 1 using the cheese-head flavor (Camembert cheese flavor) of this invention has rich Camembert cheese flavor to the flavor of the bread 3 using butter oil having been a flat.
The bread 2 using the cheese-head flavor (blue cheese flavor) of this invention had rich blue cheese flavor.

[Translation done.]

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最終頁に続く

(54)【発明の名称】　チーズ及びチーズフレーバー

(57)【要約】
【課　題】　良好な風味を有するカビ系チーズ及びこのカビ系チーズから調製されるチーズフレーバーを提供する。
【解決手段】　無脂乳固形分15重量%以下及び脂肪分65重量%以上となるように調製した乳原料にカビを接種し　発酵させることによって、雑菌な培養制御　添加酵素の反応制御やカビからの酵素精製等の煩雑な作業をすることなく、良好な風味を有するカビ系チーズを得る。また、該チーズの抽相を取得することにより、カビ系チーズの良好な風味を有するチーズフレーバーを得る。

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【特許請求の範囲】
【請求項１】無糖乳固形分15重量％以下及び脂肪分65重量％以上の風味を有することを特徴とするカビ系チーズ。
【請求項２】無糖乳固形分15重量％以下及び脂肪分65重量％以上である乳原料にカビを接種し、発酵させることを特徴とする請求項１記載のチーズの製造方法。
【請求項３】請求項１記載のチーズを配合した食品。
【請求項４】請求項１記載のチーズの油相からなるチーズフレーバー。
【請求項５】請求項４記載のチーズフレーバーを配合した食品。
【発明の詳細な説明】
【０００１】
【発明の属する技術分野】本発明は、独特かつ良好な風味を有するカビ系チーズ及びその製造方法に関し、さらに該カビ系チーズから調製されるチーズフレーバーに関する。
【０００２】
【従来の技術】チーズの熟成は、添加したレンネット、乳酸菌やカビ等のスターターとして使用する微生物、乳原料由来の微生物や酵素等の作用によって、熟成中に原料に含まれるタンパク質や脂肪が分解されることによって生成する。この風味生成過程は非常に複雑なものであり、どのような反応が起こっているのかは、全てが明らかにされているわけではない。
【０００３】一般にチーズは、良好な風味を得るための熟成に時間を要するが、様々な方法で熟成を促進させる試みがなされている。例えば、熟成温度を上げたり、チーズスラリーの水分量を上げたり、チーズスラリーに酵素や特殊な処理をした菌体を添加したりといった方法が提案されている。（FEMSマイクロバイオロジー・レビュー、12,239-252(1993)）
【０００４】チーズの表面や内部にカビを生育させたチーズであるカマンベールチーズ、ブリーチーズ、ブルーチーズ等は、カビの作用によって比較的短時間で熟成が進行し、カビ系チーズ特有の良好な風味を有する。この風味は、カビが産生する酵素によってタンパク質や脂肪が分解されることにより生成するものであるが、このカビの性質を用いてカビ系チーズの風味を短時間で生成する試みがなされている。
【０００５】例えば、チーズスラリーでカビを培養する方法（特許第2622864号公報）、チーズスラリーやカードにタンパク質分解酵素や脂肪分解酵素を添加する方法（特許第2959892号公報）、全乳を膜外殻過膜で濃縮したものでカビを培養する方法（特開平4-84859号公報）が行われてきたが、タンパク質や脂肪の分解が進まず良好な風味が生成しなかったり、逆にタンパク質や脂肪の分解が進みすぎて「カビ臭」と呼ばれる好ましくない風味や、苦味を生成したりしてしまうという問題があり、

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カビの培養制御や酵素の反応制御に莫大な労力を注ぐ必要があった。
【０００６】
【発明が解決しようとする課題】本発明は、かかる技術に鑑みて、複雑な培養制御、添加酵素の反応制御やカビからの酵素精製等の煩雑な作業をすることなく、良好な風味を有するカビ系チーズ及びこのカビ系チーズから調製されるチーズフレーバーを提供することを課題とする。
【０００７】
【課題を解決するための手段】本発明者らは、上記課題を解決するために鋭意研究を行ってきたところ、無糖乳固形分15重量％以下及び脂肪分65重量％以上となるように調製した乳原料にカビを接種し、発酵させることによって、煩雑な培養制御、添加酵素の反応制御やカビからの酵素精製等の煩雑な作業をすることなく、良好な風味を有するカビ系チーズが得られることを見出した。また、上記カビ系チーズより油相を抽出することにより、カビ系チーズの良好な風味を有するチーズフレーバーが得られることを見出し、本発明を完成した。本発明のチーズは、無糖乳固形分15重量％以下及び脂肪分65重量％以上の組成を有することを特徴とするカビ系チーズであり、複雑な培養制御を行わなくても発酵が適度に進み、良好な風味を長く維持することができることを特徴としている。以下に本発明を詳細に説明する。
【０００８】
【発明の実施の形態】本発明に使用する乳原料は、無糖乳固形分を15重量％以下及び脂肪分を65重量％以上となるように脂肪、無脂乳固形分を混合し、調製すればよい。脂肪としては、分離クリーム、バター、高脂肪クリームチーズ、クリームチーズ等を挙げることができる。また、無脂乳固形分としては、バターミルク、ホエー、脱脂乳又はこれらを粉末化したもの等を挙げることができる。
【０００９】本発明に使用するカビとしては、ペニシリウム・カマンベルティ（Penicillium camemberti）、ペニシリウム・カゼイコラム（Penicillium caseicolum）、ペニシリウム・ロックフォルティ（Penicillium roqueforti）、ゲオトリクム・キャンディダム（Geotrichum candidum）等カビ系チーズの製造に使用されているカビを挙げることができる。
【００１０】発酵温度については、それぞれのカビの生育に適した温度帯であれば、特に制限はないが、一般的なカビの培養温度である10～30℃の間であることが望ましい。発酵期間については、培養温度、カビの菌種によって異なるため、特に制限はないが、カビ系チーズの良好な風味が生成して、かつカビ臭が発生しないよう適宜設定すればよい。このようにして得られた本発明のカビ系チーズは、良好な風味を有し、そのまま食することもできるが、チーズ風味食品の原料として利用することも

できる。

【００１１】また、本発明のチーズフレーバーは、上記の乳原料、カビを使用して製造した本発明のカビ系チーズより、油相を採取することにより得ることができる。例えば、本発明のチーズを加熱してタンパク質を凝縮させた後、これを除去して油相を回収することにより得ることができる。このようにして得られた本発明のチーズフレーバーは、カビ系チーズが有する良好な風味を有し、食品に添加して利用することができる。以下に実施例を示し、本発明をより詳細に説明する。

＊【００１２】

【実施例１】クリームセパレーターでクリームの分離を繰り返すことによって、生乳より無脂乳固形分2重量％、脂肪分75重量％の高脂肪クリームチーズを調製した。この高脂肪クリームチーズにカゼインを添加して、表１に示す無脂乳固形分及び脂肪分となるように乳原料１～７を調製した。

【００１３】

【表１】

（単位　重量％）

| | 高脂肪クリームチーズ | カゼイン | 無脂乳固形分 | 脂肪分 |
|---|---|---|---|---|
| 乳原料１ | 100 | 0 | 2 | 75 |
| 乳原料２ | 98 | 2 | 4 | 73 |
| 乳原料３ | 95 | 5 | 7 | 71 |
| 乳原料４ | 90 | 10 | 12 | 67 |
| 乳原料５ | 87 | 13 | 15 | 65 |
| 乳原料６ | 82 | 18 | 20 | 61 |
| 乳原料７ | 81 | 30 | 40 | 46 |

【００１４】これらの乳原料を加熱殺菌（90℃、5秒間）した後、ペニシリウム・カゼイコラム（Pemcillium casercolum）粉子を10,000個／gとなるように乳原料に接種し、25℃で発酵させ、発酵物を経時的にサンプリングして、３名の専門パネラーによる風味の評価を行った。

※た。その結果を表２に示す。○は３名全員が風味良好としたもの、△は１ないし２名がカビ臭ありとしたもの、×は３名全員がカビ臭ありとしたものを表す。

【００１５】

【表２】

| | 熟成日数 | | | |
|---|---|---|---|---|
| | 14 日 | 28 日 | 35 日 | 42 日 |
| 乳原料１ | ○ | ○ | ○ | ○ |
| 乳原料２ | ○ | ○ | ○ | ○ |
| 乳原料３ | ○ | ○ | ○ | ○ |
| 乳原料４ | ○ | ○ | ○ | ○ |
| 乳原料５ | ○ | ○ | ○ | ○ |
| 乳原料６ | ○ | △ | × | × |
| 乳原料７ | ○ | △ | × | × |

【００１６】これによると、無脂乳固形分を15重量％以下及び脂肪分を65重量％以上となるように調製した乳原料にカビを接種して、発酵させて得られたカビ系チーズは、煩雑な培養管理をしなくてもカビ臭を発生せず、良好な風味を有することが分かった。

【００１７】

【実施例２】実施例１で調製した高脂肪クリームチーズを加熱殺菌（90℃、5分間）した後、ペニシリウム・カゼイコラム（Pemcillium casercolum）又はペニシリウム・ロックフォルティ（Pemcillium roquefortri）粉子を10,000個／gとなるように高脂肪クリームチーズに接種し、15℃で発酵させ、発酵物を経時的にサンプリングして、専門パネラーによる風味の評価を行ったところ、いずれのカビを用いたカビ系チーズも、煩雑な培養管理をしなくてもカビ臭を発生せず、良好な風味を有していた。

【００１８】

【実施例３】以下に示す割合で材料を混合し、ホモジナイザーで良く撹拌して、乳原料８～１０を調製した。

乳原料８：バターオイル65重量部、脱脂乳20重量部、ホエー粉10重量部、バターミルク5重量部（無脂乳固形分15重量％、脂肪分65重量％）

乳原料９：バター85重量部、クリームチーズ5重量部、脱脂粉乳3重量部、バターミルク粉5重量部（無脂乳固形分14重量％、脂肪分70重量％）

乳原料１０：バターオイル50重量部、クリーム20重量

部　高脂肪クリームチーズ（実施例１で調製したもの）20重量部、ホエー粉5重量部、チーズホエー5重量部（無脂乳固形分12重量%　脂肪分74重量%）

【００１９】これらの乳原料を加熱殺菌（90℃、5秒間）した後、ペニシリウム・カマンベルティ（Penicillium camemberti）及びゲオトリクム・キャンディダム（Geotrichum candidum）胞子をそれぞれ10,000個／gとなるように乳原料に移植し、20℃で発酵させて　発酵物を経時的にサンプリングして、専門パネラーによる風味の評価を行ったところ、乳原料８～１０を用いたいずれのカビ系チーズも、煩雑な培養管理をしなくてもカビ臭＊を発生せず、良好な風味を有していた。

【００２０】【実施例４】実施例２と同様の条件で26日間発酵させて得たカマンベールチーズ風味及びブルーチーズ風味の２種類のカビ系チーズ、及び実施例１で調製し、加熱殺菌（90℃、5秒間）した高脂肪クリームチーズを用いて、表３に示した配合で、常法に従いタルト１～３を製造した。

【００２１】【表３】

| | タルト１ | タルト２ | タルト３ |
|---|---|---|---|
| （ビスケット生地） | | | |
| 本発明カビ系チーズ（カマンベールチーズ風味） | 80g | － | － |
| 本発明カビ系チーズ（ブルーチーズ風味） | － | 80g | － |
| 高脂肪クリームチーズ | － | － | 80g |
| 塩 | 少々 | 少々 | 少々 |
| グラニュー糖 | 25g | 25g | 25g |
| 溶き卵 | 1/2個 | 1/2個 | 1/2個 |
| 薄力粉 | 145g | 145g | 145g |
| （チーズクリーム） | | | |
| 本発明カビ系チーズ（カマンベールチーズ風味） | 200g | － | － |
| 本発明カビ系チーズ（ブルーチーズ風味） | － | 200g | － |
| 高脂肪クリームチーズ | － | － | 200g |
| カッテージチーズ | 100g | 100g | 100g |
| ブランデー | 大さじ１ | 大さじ１ | 大さじ１ |
| 生クリーム | 90g | 90g | 90g |
| グラニュー糖 | 45g | 45g | 45g |
| 粉ゼラチン | 3g | 3g | 3g |
| 水 | 15g | 15g | 15g |

【００２２】これらのタルトについて　専門パネラーによる風味の評価を行ったところ、高脂肪クリームチーズを用いたタルト３の風味がブラットであったのに対して　本発明のカビ系チーズ（カマンベールチーズ風味）を用いたタルト１は、豊かなカマンベールチーズ風味を有しており、本発明のカビ系チーズ（ブルーチーズ風味）を用いたタルト２は　豊かなブルーチーズ風味を有していた。

【００２３】【実施例５】実施例２と同様の条件で20日間発酵させて得たカマンベールチーズ風味及びブルーチーズ風味の２種類のカビ系チーズを、それぞれ95℃で5分間加熱した後、放置して試験部分を除去し、結着部分を回収して２種類の本発明のチーズフレーバーを製造した。

【００２４】【実施例６】表４で示す配合で、常法に従い食パン１～３を製造した。

【００２５】【表４】

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（単位ｇ）

| | 食パン１ | 食パン２ | 食パン３ |
|---|---|---|---|
| 強力粉 | 250 | 250 | 250 |
| 砂糖 | 14 | 14 | 14 |
| 脱脂粉乳 | 5 | 5 | 5 |
| 食塩 | 4 | 4 | 4 |
| 本発明チーズフレーバー（カマンベールチーズ風味） | 15 | — | — |
| 本発明チーズフレーバー（ブルーチーズ風味） | — | 15 | — |
| バターオイル | — | — | 15 |
| 水 | 180 | 180 | 180 |
| ドライイースト | 3 | 3 | 3 |

【００２６】これらの食パンについて、専門パネラーによる風味の評価を行ったところ、バターオイルを用いた食パン３の風味がフラットであったのに対して、本発明のチーズフレーバー（カマンベールチーズ風味）を用いた食パン１は、豊かなカマンベールチーズ風味を有しており、本発明のチーズフレーバー（ブルーチーズ風味）を用いた食パン２は、豊かなブルーチーズ風味を有して本いた。

【００２７】

【発明の効果】本発明のカビ系チーズは、煩雑な培養管理をしなくてもカビ臭を発生せず、良好な風味を有しているため、従来のカビ系チーズ風味食品に比べて、簡単に得ることができる。

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フロントページの続き

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